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soon as the current reached the ground, the wet earth being a good conductor?

2. Why did not the lightning strike the trees on the summit rather than one several feet below, and why not the top of the latter?

3. Why did it indent the pipes, and why the edges facing the current rather than the other? Is electricity material? Can anything not material manifest such a *vis viva* or working energy? Why was the iron melted when electricity has no inherent heat?

4. Do not the effects at the junctions of the pipes indicate a sort of damming up of the current by the cement until the pressure became sufficient to burst the barrier, and then it struck the following edge with its accumulated flood?

MARSHALL HENSHAW.

Amherst, Mass., Apr. 21.

[The phenomena presented in lightning strokes have heretofore appeared so lawless that it may be well to call attention to the fact, which has been repeatedly observed, that but little damage is generally done to portions of trees on the same levels as the foliage. It has also been observed that the presence on any level of a conductor of considerable surface, and consequent large electrical capacity, mitigates the effects on that level. Whether the large conducting surface presented by the wet leaves of a tree is a parallel case is, of course, a question; but the fact as

stated is among those well authenticated in regard to lightning effects.—Ed.]

Periodicity of the Aurora.

ON Saturday night, April 23, there was a fine Aurora seen in this locality whenever the clouds broke away until after midnight. This display is specially interesting because it is the sixth consecutive return of an aurora at the precise interval of twenty-seven days, the dates being as follows: Dec. 9, Jan. 5, Feb. 2, Feb. 29, March 27, and April 23. The display will be due again upon May 20. It has been associated with reappearances at the sun's eastern limb of an area south of the equator which has been much frequented by spots and faculae. In like manner a record now before me shows that reappearances at the eastern limb of disturbed areas in the sun's northern hemisphere have their chief magnetic effect during the autumn months. From this it would seem that in order that a solar disturbance may affect the earth's magnetism it must be in a particular location, namely, at the eastern limb and as near as possible to the plane of the earth's orbit. Certainly such disturbances do not have their magnetic effect promiscuously in all locations, or at present we should have auroras and magnetic storms continuously, which is very far from being the case.

M. A. VEEDER.

Lyons, N. Y., April 25.

CALENDAR OF SOCIETIES.

Philosophical Society, Washington.

April 23.—G. M. Searle, On a Simple Form of Double-Image Micrometer; Arthur Keith, The Geology of Chilhowee Mountain in Tennessee; B. E. Fernow, Timber Physics.

Chemical Society, Washington.

April 14.—Wm. H. Krug, On Behavior of Acetone and Carbo-Hydrates; F. W. Clarke, On the Decomposition of Certain Silicates by Heat; Thomas Taylor, Smokeless Powder.

Publications Received at Editor's Office.

BRYANT, WILLIAM C. Sella, Thanatopsis and other Poems. Boston, Houghton, Mifflin & Co. 16°, paper. 95 p. 15 cts.
GORE, J. HOWARD. A German Science Reader. Boston, D. C. Heath & Co. 12°. 196 p. 80 cts.
MILLER, OLIVE THORNE. Little Brothers of the Air. Boston, Houghton, Mifflin & Co. 12°. 271 p. \$1.25.
POSSE, NILS. Handbook of School Gymnastics of the Swedish System. Boston, Lee & Shepard. 18°. 192 p. 50 cts.
WEED, CLARENCE M. Spraying Crops. New York, Rural Pub. Co. 16°. 110 p. Ill.

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For exchange.—Three copies of "American State Papers Bearing on Sunday Legislation," 1891, \$2.50, new and unused, for "The Sabbath," by Harmon Kingsbury, 1840; "The Sabbath," by A. A. Phelps, 1842; "History of the Institution of the Sabbath Day, Its Uses and Abuses," by W. L. Fisher, 1859; "Humorous Phases of the Law," by Irving Browne; or other works amounting to value of books exchanged, on the question of governmental legislation in reference to religion, personal liberty, etc. If preferred, I will sell "American State Papers," and buy other books on the subject. WILLIAM ADDISON BLAKELY, Chicago, Ill.

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To exchange Wright's "Ice Age in North America" and Le Conte's "Elements of Geology" (Copyright 1882) for "Darwinism," by A. R. Wallace. "Origin of Species," by Darwin. "Descent of Man," by Darwin. "Man's Place in Nature," Huxley. "Mental Evolution in Animals," by Romanes. "Pre-Adamites," by Winchell. No books wanted except latest editions, and books in good condition. C. S. Brown, Jr., Vanderbilt University, Nashville, Tenn.

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